

## CLAIMS

1. A composition comprising an extract of Liriopsis tuber for protecting brain cells or improving memory.

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2. The composition of claim 1, wherein the content of the extract of Liriopsis tuber is 0.5-50% by weight based on the total weight of the composition.

10 3. The composition of claim 1, wherein the extract of Liriopsis tuber is obtained by extracting with a solvent selected from the group consisting of C<sub>1-4</sub> lower alcohols or a mixture of said lower alcohols and water, acetone, chloroform, methylene chloride, ether and ethyl acetate.

15 4. The composition of claim 1, wherein the extract of Liriopsis tuber is obtained by dissolving the solvent soluble fraction obtained as described in claim 3 in a mixed solvent of C<sub>1-4</sub> lower alcohol and water, adjusting pH value with an acid to a range of 2-4, and further fractionating via extraction with an equal amount of chloroform.

20 5. The composition of claim 1, wherein the extract of Liriopsis tuber is obtained by dissolving the solvent soluble fraction obtained as described in claim 3 in a mixed solvent of C<sub>1-4</sub> lower alcohol and water, adjusting pH value with an acid to a range of 2-4, further extracting with an equal amount of chloroform, adjusting pH value of the chloroform insoluble fraction with ammonium hydroxide to a range of 9-12, extracting the chloroform insoluble fraction with an equal amount of chloroform-methanol mixture, 25 further extracting the chloroform-methanol insoluble fraction with methanol,

fractionating, thereby obtaining the extract of *Liriopsis* tuber from the methanol soluble fraction.

6. The composition of claim 1, wherein the extract of *Liriopsis* tuber is obtained  
5 by dissolving the solvent soluble fraction obtained as described in claim 3 in a mixed solvent of C<sub>1-4</sub> lower alcohol and water, adjusting pH value with an acid to a range of 2-4, further extracting with an equal amount of chloroform, adjusting pH value of the chloroform insoluble fraction with ammonium hydroxide to a range of 9-12, extracting the chloroform insoluble fraction with an equal amount of chloroform-methanol mixture,  
10 further extracting the chloroform-methanol insoluble fraction with methanol, fractionating, thereby obtaining the extract of *Liriopsis* tuber from the methanol insoluble fraction.

7. The composition of claim 1, wherein said composition further comprises at  
15 least one component selected from the group consisting of pharmaceutically acceptable carriers and additives.

8. The composition of claim 1, wherein the composition is formulated into oral administration, topical applications, suppositories or sterile injections.

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9. Foodstuff comprising the composition according to claim 1 and a sitologically acceptable additive.

10. The foodstuff of claim 9, wherein the content of the extract of *Liriopsis*  
25 tuber is 0.1 to 15% by weight based on the total weight of foodstuff.

11. The foodstuff of claim 9, wherein said sitologically acceptable additive is at least one component selected from the group consisting of natural carbohydrates, flavors, nutrients, vitamins, minerals, seasonings, coloring agents, fillers, pectic acid and its salt, alginic acid and its salt, organic acids, protective colloidal thickeners, pH regulating agents, stabilizers, preservatives, antioxidants, glycerin, alcohols, carbonizing agents and sarcocarp.

12. A beverage comprising the composition according to claim 1 and a sitologically acceptable additive.

13. The beverage of claim 12, wherein the content of the extract of Liriopsis tuber is 1-30g per 100ml of the beverage.

14. The beverage of claim 12, wherein said sitologically acceptable additive is at least one component selected from the group consisting of natural carbohydrates, flavors, nutrients, vitamins, minerals, seasonings, coloring agents, fillers, pectic acid and its salt, alginic acid and its salt, organic acids, protective colloidal thickeners, pH regulating agents, stabilizers, preservatives, antioxidants, glycerin, alcohols, carbonizing agents and sarcocarp.

15. A method for protecting brain cells against damage caused by excitatory amino acids and oxidative stress in a mammal comprising administering to said mammal a therapeutic amount of an extract of Liriopsis tuber.

16. The method of claim 15, wherein said extract of *Liriopsis tuber* is administered in an amount of from 0.1mg/kg to 500mg/kg.

17. The method of claim 16, wherein said extract is administered on a daily 5 basis.

18. The method of claim 15, wherein said extract is administered to said mammal via a route selected from the group consisting of oral administration, topical application, sterile injection, inhalation and rectal administration.

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19. The method of claim 15, wherein said extract is concurrently administered with a pharmaceutically acceptable carrier, excipient or diluent.

20. The method of claim 15, wherein said administration comprises combining 15 said extract with a beverage, and then orally administering said beverage.

21. The method of claim 15, wherein said administration comprises combining said extract with a foodstuff, and then orally administering said foodstuff.

20 22. A method for inhibiting AMPA-induced depolarization of a neuronal cell of a mammal comprising administering to said mammal a therapeutic amount of an extract of *Liriopsis tuber*.

23. The method of claim 22, wherein said extract of *Liriopsis tuber* is 25 administered in an amount of from 0.1mg/kg to 500mg/kg.

24. The method of claim 23, wherein said extract is administered on a daily basis.

5 25. The method of claim 22, wherein said extract is administered via a route selected from the group consisting of oral administration, topical application, sterile injection, inhalation and rectal administration.

10 26. The method of claim 22, wherein said extract is concurrently administered with a pharmaceutically acceptable carrier, excipient or diluent.

27. The method of claim 22, wherein said administration comprises combining said extract with a beverage, and then orally administering said beverage.

15 28. The method of claim 22, wherein said administration comprises combining said extract with a foodstuff, and then orally administering said foodstuff.

20 29. A method of facilitating tyrosine phosphorylation of a hippocampal protein of a mammal comprising administering to said mammal a therapeutic amount of an extract of Liliopsis tuber.

30. The method of claim 29, wherein said extract of Liliopsis tuber is administered in an amount of from 0.1mg/kg to 500mg/kg.

25 31. The method of claim 30, wherein said extract is administered on a daily

basis.

32. The method of claim 29, wherein said extract is administered via a route selected from the group consisting of oral administration, topical application, sterile 5 injection, inhalation and rectal administration.

33. The method of claim 29, wherein said extract is concurrently administered with a pharmaceutically acceptable carrier, excipient or diluent.

10 34. The method of claim 29, wherein said administration comprises combining said extract with a beverage, and then orally administering said beverage.

35. The method of claim 29, wherein said administration comprises combining said extract with a foodstuff, and then orally administering said foodstuff.

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36. The method of claim 29, wherein said hippocampal protein comprises an insulin receptor.

37. A method of inhibiting cholinesterase activity in the brain of a mammal 20 comprising administering to said mammal a therapeutic amount of an extract of Liriopsis tuber.

38. The method of claim 37, wherein said extract of Liriopsis tuber is administered in an amount of from 0.1mg/kg to 500mg/kg.

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39. The method of claim 38, wherein said extract is administered on a daily basis.

40. The method of claim 37, wherein said extract is administered via a route  
5 selected from the group consisting of oral administration, topical application, sterile injection, inhalation and rectal administration.

41. The method of claim 37, wherein said extract is concurrently administered with a pharmaceutically acceptable carrier, excipient or diluent.

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42. The method of claim 37, wherein said administration comprises combining said extract with a beverage, and then orally administering said beverage.

43. The method of claim 37, wherein said administration comprises combining  
15 said extract with a foodstuff, and then orally administering said foodstuff.

44. Use of an extract of *Liriopsis* tuber for the preparation of a medicament for preventing or treating neurodegenerative diseases.

20 45. Use of an extract of *Liriopsis* tuber for the preparation of a medicament for preventing or treating dementia.

46. Use of an extract of *Liriopsis* tuber for the preparation of a medicament for improving memory.

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